

EXHIBIT 5

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MUELLER SYSTEMS, LLC,

Petitioner

v.

REIN TECH, INC.,

Patent Owner

Case IPR2020-00099
U.S. Patent No. 8,347,427

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 8,347,427**

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Petition for *Inter Partes* Review
U.S. Patent No. 8,347,427

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EXHIBITS CITED

Exhibit No.	DESCRIPTION
1001	U.S Patent No. 8,347,427 (“the ’427 Patent”) to Klicpera
1002	Prosecution History of the ’427 Patent (Appl. No. 13/216,521)
1003	<i>Ex Parte</i> Reexamination History of the ’427 Patent, as of the date of filing this Petition (Appl. No. 90/014,351)
1004	U.S. Patent No. 8,866,634 to Williamson (“ <i>Williamson</i> ”)
1005	U.S. Patent Publ. No. 2004/0193329 to Ransom (“ <i>Ransom</i> ”)
1006	U.S. Patent Publ. No. 2009/0070682 to Dawes (“ <i>Dawes</i> ”)
1007	Rein Tech’s Contact Webpage, https://www.reintechinc.com/contact.html , last accessed Sept. 24, 2019
1008	U.S. Patent No. 9,254,499 to Klicpera
1009	Pacific Gas and Electric Company, SmartMeter System—How It Works, archived web page from July 12, 2010, <i>available at</i> https://web.archive.org/web/20100712031615/https://www.pge.com/myhome/customerservice/smartmeter/howitworks/ , last accessed Oct. 9, 2019
1010	New World Encyclopedia, Thermocouple, archived webpage from

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	Dec. 28, 2008, <i>available at</i> https://web.archive.org/web/20081228234252/https://www.newworldencyclopedia.org/entry/Thermocouple
1011	Thermocouple Wire Report, webpage last updated on Apr. 8, 2004, <i>available at</i> http://www.lieda.co.za/Wordpress/wp-content/uploads/reports/ThermocoupleWireReport.pdf
1012	Wikipedia, Pressure Sensor, archived webpage from Nov. 17, 2007, <i>available at</i> https://web.archive.org/web/20071117202257/https://en.wikipedia.org/wiki/Pressure_sensor
1013	Wikipedia, Flow Measurement, archived webpage from Oct. 28, 2007, <i>available at</i> https://web.archive.org/web/20071028063648/https://en.wikipedia.org/wiki/Flow_measurement
1014	U.S. 8,013,732 to Petite (“ <i>Petite</i> ”)
1015	Prosecution History of U.S. Provisional Appl. No. 61/389,709 to Klicpera
1016	U.S. Patent No. 9,266,136 to Klicpera
1017	U.S. Patent No. 9,061,307 to Klicpera
1018	Declaration of Vijay Madiseti, Ph.D. (“ <i>Madiseti</i> ”)

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I. INTRODUCTION

Petitioner Mueller Systems, LLC (“Petitioner” or “Mueller”) requests *inter partes* review and cancellation of claims 1-8, 13-16, and 18-20 of U.S. Patent No. 8,347,427 (“the ’427 patent,” Ex. 1001). The challenged claims are directed to a water parameter use and monitoring apparatus capable of transferring water parameter data to one or more remote monitor apparatuses. This purported invention is nothing more than an obvious use of standard equipment operating in conventional ways and communicating using existing networks.

Indeed, in the application for the ’427 patent, the inventor described the well-known feature of transmitting data from water meters to remote devices so that water usage at a residence or business may be monitored. This feature is clearly disclosed in a prior art reference *Williamson*, which was never considered by the Examiner during prosecution. The inventor then simply copied other known features from the prior art and claimed them as features of the purported invention. Specifically, the patent owner and inventor have admitted that columns and columns of detailed disclosure concerning data security mechanisms, such as authentication, encryption, and integrity techniques, were “copied and plagiarized” from a prior art reference, *Ransom*.

During prosecution, the Examiner allowed the claims of the ’427 patent because the data security features were added in an attempt to distinguish the claims

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from the prior art. Had the Examiner known that these features were copied from *Ransom*, however, the '427 patent would never have issued. As shown below, *Williamson* and *Ransom* render nearly all the challenged claims obvious. The remaining two dependent claims recite features that were also well-known and obvious as exemplified in a prior art reference, *Dawes*.

Lest there be any doubt, the inventor recently filed a request for *ex parte* reexamination on behalf of the patent owner admitting that claims 1-10 and 12-20 in the '427 patent (which includes all the challenged claims) are invalid. The patent owner also proposed substantive amendments to challenged independent claim 1, as well as numerous dependent claims. That proceeding has been instituted and should constitute a concession that all challenged claims of the '427 patent are unpatentable.

Accordingly, the challenged claims of the '427 patent were obvious and should be cancelled.

II. MANDATORY NOTICES

A. Real Party in Interest

In accordance with 37 C.F.R. § 42.8(b)(1), Mueller identifies Mueller Systems, LLC, and its parent company, Mueller Water Products, Inc., a public company, as the real parties in interest.

B. Related Matters

In accordance with 37 C.F.R. § 42.8(b)(2), Mueller has been sued for

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allegedly infringing the '427 patent in *Rein Tech, Inc. v. Mueller Systems, LLC*, No. 1:18-cv-1683-MN (D. Del.). The case was filed on October 26, 2018, and remains pending. Patent Owner Rein Tech, Inc. ("Patent Owner" or "Rein Tech") is not currently asserting any claims of the '427 patent against Mueller, but it asserted several claims of the '427 patent against Mueller in its Complaint and has purported to reserve the right to later reassert such claims against Mueller.

The '427 patent was also involved in the following proceedings: *Rein Tech, Inc. v. Flo Technologies, Inc.*, No. 1:18-cv-1682-MN (D. Del.) and *Rein Tech, Inc. v. Xylem, Inc.*, No. 1:18-CV-1684-MN (D. Del.). Those proceedings concluded in January and March, 2019, respectively.

The '427 patent issued from U.S. Patent Application No. 13/216,521 (the "'521 application"). A copy of the file history of the '521 application is attached as Exhibit 1002.

The '427 patent is the subject of a pending *ex parte* reexamination proceeding filed by Rein Tech: U.S. Serial No. 90/014,351. A copy of the reexamination file history for the '427 patent is attached as Exhibit 1003.

C. Lead and Backup Counsel and Service Information

In accordance with 37 C.F.R. § 42.8(b)(3)-(4), Mueller's identification of counsel and service information is provided below.

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D. Power of Attorney and Fees

Mueller is filing a power of attorney concurrently with this petition, as well as electronic payment of the fee specified by 37 C.F.R. § 42.15(a). If additional fees are due at any time throughout the course of these proceedings, the undersigned authorizes the U.S. Patent and Trademark Office to charge such fees to Deposit Account No. 50-5154.

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III. GROUNDS FOR STANDING

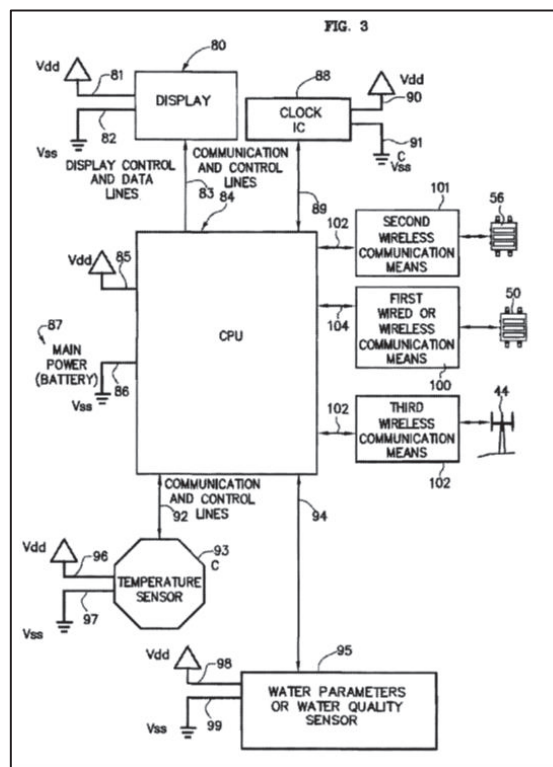
Pursuant to 37 C.F.R. § 42.104(a), Mueller certifies that the '427 patent is available for *inter partes* review and that Mueller is not barred or estopped from requesting this *inter partes* review on the grounds identified herein.

IV. THE '427 PATENT

A. Overview

The '427 patent is directed to a water parameter use apparatus. (*E.g.*, Ex. 1001, claim 1.) The '427 patent discloses that “[t]he present invention comprises a water use and water energy use monitoring display apparatus having a base station attached to a water supply with wireless or wire capability to communicate with one or more remote display and for [sic] recording apparatus devices.” (*Id.*, 3:6-10.) Figure 3, reproduced below, is a schematic showing various components of the water parameter use and monitoring apparatus, such as a CPU or microprocessor, a display, a battery, sensors, and wireless communication means. (*Id.*, 4:19-21.)

'427 Patent, Figure 3



According to the '427 patent, “[i]n real time, the identification of leaks can be brought to the attention of an owner or appropriate repair individual thereby offsetting costs of system implementation of the present invention by savings in water costs and benefits in water conservation.” (*Id.*, 41:7-11.) (Ex. 1018 (“Madisetti”) ¶¶27-28.)

The '427 patent names Michael E. Klicpera as the sole inventor. (Ex. 1001.) According to USPTO records, the '427 patent is assigned to Rein Tech. According to Rein Tech’s website, Rein Tech was founded by Klicpera, who is a registered patent attorney. (Ex. 1007.) The '427 patent is part of a family of patents and patent

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applications, all filed and prosecuted by Klicpera, that generally relate to water conservation. (Ex. 1001.) For example, priority application Appl. No. 11/877,860 (now U.S. Patent No. 9,254,499), relates to an adjustable shower or bath head that “monitors water usage to encourage water savings.” (Ex. 1008, 2:5-7.)

B. The Specification

1. The Purported Invention Uses Standard Equipment and Existing Communication Networks.

The ’427 patent specification discloses that the claimed water parameter use and monitoring apparatus is comprised of standard equipment that operates in conventional ways and communicates using existing networks. (Madisetti ¶¶30-32.) For example, the specification discloses that “the present invention water parameter use display and monitoring device” can be “incorporated into . . . [the] primary water meter at residential or commercial facilities.” (Ex. 1001, 16:62-66.)

The specification discloses that the monitoring device is comprised of water pipe joint unions, a housing section containing a microprocessor, a power source, and displays. (*Id.*, 16:66-17:5.) According to the specification, the “plurality of water pipe unions or joints 30, 32, 34 and 36 can be fabricated from *typical* metallic piping materials.” (*Id.*, 17:6-8).¹ Similarly, the “material for fabricating the housing 18 is

¹ In this Petition, all emphasis in the quotations has been added unless otherwise indicated.

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not particularly important,” and can be any “metallic material.” (*Id.*, 18:8-9, 17:65-67.) The specification also discloses that existing LCD units, such as the “LCD-00569 marketed by Sparkfun Electronics,” “can be used with the present invention” as the display, and that existing microprocessors, such as the “MSP430 family of processors from Texas Instruments,” “could be utilized in the present invention” as the CPU. (*Id.*, 18:49-56, 21:21-24.)

For communicating water use data, the specification discloses that the wireless communication means can use existing “radio-frequency, Bluetooth, ZigBee WiFi, optical or other wireless technology for transferring the water parameter data generated by the sensors and collected by the microprocessor and sent to a wireless to a [sic] display means and/or a remotely positioned receiver apparatus.” (*Id.*, 9:4-12.) The specification identifies numerous examples of Bluetooth modules and wireless protocols that “can be utilized with the present invention,” and explains that “that there are numerous wireless protocols that have been developed that, although not specifically listed, could be utilized with the present invention for data transfer purposes.” (*Id.*, 9:12-28.)

2. The Specification Includes Substantial Disclosure Copied from the Prior Art.

In addition to describing the monitoring apparatus as using “typical,” off-the-shelf components and taking advantage of wireless protocols that have already been

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developed, the '427 patent specification describes details of the purported invention using columns and columns of detailed description that were simply copied from the prior art. (Madisetti ¶33.)

a. Data Security Copied from Ransom

For example, in the pending *ex parte* reexamination of the '427 patent, Klicpera admitted that sections of the written description relating to data security techniques were “copied and plagiarized” from a prior art reference, U.S. Publ. No. 2004/0193329 to Ransom (“*Ransom*”) (Ex. 1005). (Ex. 1003, 6.) Specifically, at least the end of column 10 through much of column 14 of the '427 patent specification (Ex. 1001), starting at 10:55-57 (“There are various security techniques, including encryption, authentication, integrity and non-repudiation that provide secure communications.”) and continuing through 14:25-28 (discussing “unsigned code or code signed by a non-trusted entity”) were copied and only slightly modified from *Ransom* (Ex. 1005), including at least paragraphs [0116]-[0131], paragraphs [0143], [0150]-[0151], [0153], [0162], [0164], [0166]-[0168], [0172]-[0174], [0191], and [0194].

b. Mesh Networks Copied from PG&E’s SmartMeter Webpage

Similarly, all the written description in the '427 patent specification relating to “mesh-enabled” devices such as “access points” was copied from a prior art

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Pacific Gas and Electric Company webpage (“PG&E”) describing PG&E’s “SmartMeter” electric meter system. (Ex. 1009.) The ’427 patent describes the prior art SmartMeter system in the “Background” section of the specification (Ex. 1001, 1:46-2:19), and includes copied disclosure from PG&E describing how, e.g., “[e]ach SmartMeter™ electric meter is equipped with a network radio, which transmits meter data to an electric network access point,” and how the prior art system “uses RF mesh technology, which allows meters and other sensing devices to securely route data via nearby meters and relay devices, creating a ‘mesh’ of network coverage.” (*Id.*, 1:62-67.) *See* Ex. 1009, 1-2 (containing the copied disclosure). The ’427 patent then reproduces the copied disclosure from PG&E in the “Description of the Preferred Embodiments” section of the specification to describe the “RF mesh network” that can be used with the purported invention. (Ex. 1001, 7:55-67, 16:28-39, 37:1-24.)

c. Additional Disclosure Copied From the Prior Art

Many other portions of the ’427 patent specification’s detailed description were also copied from prior art publications, such as online encyclopedias. For example, the disclosure at 23:3-21 and 23:30-47 of the ’427 patent (Ex. 1001) regarding the physics of thermocouples was copied from the 2008 New World Encyclopedia online entry for “Thermocouple” (Ex. 1010, 1). The disclosure at 24:1-25:14 (Ex. 1001) regarding the types of thermocouples available for use with the

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purported invention was copied from a “Thermocouple Wire Report” available online since at least 2004 (Ex. 1011, 1, 7-9). The disclosure at 26:14-34 (Ex. 1001) regarding pressure sensors that could be used was copied from a prior art Wikipedia entry for “Pressure sensor” (Ex. 1012, 1). And the disclosure at 27:1-29:5 (Ex. 1001) regarding the types of flow meters that “can be utilized with the present invention” were copied from a prior art Wikipedia entry for “Flow measurement” (Ex. 1013, 1-4). Mueller expects that discovery in the related district court proceeding involving the ’427 patent will reveal even more evidence of copying from the prior art.

C. The Prosecution History

The application for the ’427 patent was filed on January 14, 2015, as a continuation-in-part application and purported to claim priority to several prior, domestic applications. (Ex. 1002, 20.) The application was filed and prosecuted by Klicpera. (*Id.*, 21.) The application was examined under the pre-AIA first to invent provisions.

The Examiner initially rejected all claims under 35 U.S.C. § 112 on numerous grounds, and as obvious under 35 U.S.C. § 103 in view of certain references. (*Id.*, 160-165.) In response, Klicpera made extensive and substantive amendments to the specification (including adding new Figures 7 and 8 and new paragraphs describing such figures), amended the claims, and argued that the primary cited reference is not a valid prior art reference, is not enabling, and is distinguishable from the present

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invention. (*Id.*, 194-201, 305-312.) Klicpera also submitted a Rule 131 Declaration identifying numerous textbooks, websites, and other publications he reviewed in connection with preparing his patent applications. (*Id.*, 224-233.)

After receiving a final rejection, Klicpera amended claim 1 to add the limitation “said wireless communication utilizes technology to transfer water use information and/or data *in a secure format* to one or more displays.” (*Id.*, 411-412.) The application was then allowed. (*Id.*, 415-419.) Klicpera submitted an amendment after notice of allowance, and further amended claim 1 to recite that “said communication means *utilizing technology to securely provide water parameter data in a confidential format.*” (*Id.*, 431-433.) This limitation appears in claim 1 of the ’427 patent as issued.²

As explained herein, however, the Examiner would not have allowed the claims if he had known that the disclosure in the application regarding data security had been copied from the prior art *Ransom* reference. (Ex. 1005.)

D. The Pending *Ex Parte* Reexamination

On August 2, 2019, Klicpera, on behalf of Rein Tech, filed a request for *ex*

² In the amendment after notice of allowance, the language of claim 1 appears to have been mistakenly copied from the claim as originally presented, and failed to include the changes entered through Klicpera’s prior claim amendments. (Ex. 1002, 90, 309-310, 411-412, 432-433.)

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parte reexamination of claims 1-10 and 12-20 of the '427 patent. (Ex. 1003, 2.) In the request, Rein Tech admitted claims 1-10 and 12-20 are anticipated and/or obvious under thirteen (13) independent grounds in view of numerous prior art references. (*Id.*, 9-10).

With the request, Rein Tech also submitted a preliminary amendment with substantive amendments to the specification and most of the claims. (*Id.*, 122-138.) The preliminary amendment seeks to add, delete, and modify various limitations in independent claim 1, as well as in numerous dependent claims, including claim 11 for which reexamination was not specifically requested. (*Id.*, 135-138.) Such proposed amendments amount to a concession that all claims of the '427 patent are unpatentable. *M&P Golf v. Max Out Golf*, IPR2016-00784, Paper 43 at 4, 2017 Pat. App. LEXIS 11467, *5 (PTAB Aug. 30, 2017) (construing claim amendments made by patent owner in concurrent, *ex parte* reexamination to be “an abandonment of contest and a concession of unpatentability” as to original claims of issued patent).

On September 10, 2019, the Examiner issued a decision granting *ex parte* reexamination of claims 1-10 and 12-20. (Ex. 1003, 486.) The Examiner acknowledged that the addition of the limitation “said communication means utilizing technology to securely provide water parameter data in a confidential format” appeared to place the application for the '427 patent in condition for allowance. (*Id.*, 490.) The Examiner found that this limitation is taught by U.S.

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8,013,732 to Petite (“*Petite*”) (Ex. 1014), and thus a substantial new question of patentability is raised in view of *Petite* and other cited references. (Ex. 1003, 496-497.)

E. The Earliest Effective Priority Date for the Challenged Claims

The application for the ’427 patent, Appl. No. 13/216,521 (“the ’521 application”), was filed on August 24, 2011, as a continuation-in-part application of each of three original applications, filed on September 7, 2010, August 11, 2009, and October 24, 2007, respectively. (Ex. 1001; Ex. 1002, 20.) The ’521 application also claims the benefit of provisional Appl. No. 61/389,709 (“the ’709 application”) filed on October 4, 2010. (*Id.*)

Challenged independent claim 1 includes the following limitation: “a base station designed to be connected to a cold or ambient main water supply for a residence or commercial building.” (Ex. 1001, Claim 1.) This feature was first disclosed in the provisional ’709 application (Ex. 1015), and is not disclosed or supported in any of the other, earlier-filed priority applications, now U.S. Patent Nos. 9,266,136 (Ex. 1016); 9,061,307 (Ex. 1017); and 9,254,499 (Ex. 1008). (Madisetti ¶46.) Consequently, the earliest priority date for the Challenged Claims (independent claim 1 and its challenged dependent claims) is the filing date of the ’709 application, i.e., October 4, 2010. (Madisetti ¶46.)

In the *ex parte* reexamination of the ’427 patent, Rein Tech stated that

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Klicpera “conceived using encryption integrity, and authentication to provide secure wireless and wired communications for a water meter in a written document dated April 15, 2009.” (Ex. 1003, 5.) This feature is required by the limitation “said communication means utilizing technology to securely provide water parameter data in a confidential format to one or more remote monitor apparatuses” in independent claim 1. (Ex. 1001, Claim 1.) As a result, and based on Rein Tech’s admission, Rein Tech cannot show that claim 1 or its challenged independent claims are entitled to an effective filing date or date of invention prior to April 15, 2009. Even with such a priority date,³ each of the references cited herein qualifies as prior art to the Challenged Claims.

The burden is on Rein Tech to establish priority. *Natural Alternatives Int’l v. Iancu*, 904 F.3d 1375, 1380 (Fed. Cir. 2018) (“[C]laims in a patent or patent application are not entitled to priority under § 120 at least until the patent owner *proves* entitlement to the PTO, the Board, or a federal court.”) (Emphasis in original.). Here, Rein Tech is unable to show that the Challenged Claims are entitled to an effective filing date or date of invention prior to the prior art references cited

³ To be clear, Mueller disagrees that any claim of the ’427 patent is entitled to such an effective filing date or date of invention, and is simply pointing to Rein Tech’s admission for purposes of this Petition.

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herein.

V. STATEMENT OF THE PRECISE RELIEF REQUESTED

A. Claims for Which Review is Requested

Mueller respectfully requests review under 35 U.S.C. § 311 of claims 1-8, 13-16, and 18-20 of the '427 patent (the "Challenged Claims"), and the cancellation of the Challenged Claims as unpatentable.

B. Statutory Grounds of Challenge

Mueller requests *inter partes* review and cancellation of the Challenged Claims of the '427 patent based on the following grounds:

Ground 1: Claims 1, 2, 4-8, 13, 14, 16, and 18-20 are unpatentable under 35 U.S.C. § 103 as obvious over *Williamson* in view of *Ransom*.

Ground 2: Claims 3 and 15 are unpatentable under 35 U.S.C. § 103 as obvious over *Williamson* and *Ransom* in view of *Dawes*.

C. Citation of Prior Art

In support of the grounds of unpatentability set forth above, Mueller cites the following prior art references:

Prior Art References	
Ref. 1:	<i>Williamson</i> , U.S. Patent No. 8,866,634 (Ex. 1004); issued on October 21, 2014, from an international (PCT) application filed on May 4, 2007, that designated the United States and published in English; prior

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	art under at least pre-AIA 35 U.S.C. § 102(e).
Ref. 2:	<i>Ransom</i> , U.S. Patent Publ. No. 2004/0193329 (Ex. 1005); published on September 30, 2004, from an application filed in the United States on January 5, 2004; prior art under at least pre-AIA 35 U.S.C. §§ 102(b) and 102(e).
Ref. 3:	<i>Dawes</i> , U.S. Patent Publ. No. 2009/0070682 (Ex. 1005); published on March 12, 2009, from an application filed in the United States on August 25, 2008; prior art under at least pre-AIA 35 U.S.C. §§ 102(b) and 102(e).

VI. CLAIM CONSTRUCTION

In an *inter partes* review, claims are “construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b).” 37 C.F.R. § 42.100(b). Claims must be given their ordinary and customary meaning as understood by a person of ordinary skill in the art at the time of the invention in light of the specification and the prosecution history pertaining to the patent. *Id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-1313 (Fed. Cir. 2015) (*en banc*); *see also* 83 Fed. Reg. 51,340. Below, Mueller provides a construction for certain terms in the Challenged Claims. As to the remaining terms, for the purposes of this proceeding, those claims should be given their plain and ordinary meaning, as understood by a person of ordinary skill in the art and consistent with the intrinsic

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evidence.⁴

D. Level of Ordinary Skill in the Art

A person of ordinary skill in the art of the '427 patent would have had a minimum of a Bachelor's degree in electrical engineering, computer engineering, computer science, or a related field, and two or more years of experience in the development or design of wireless communication systems, or the equivalent. (Madisetti ¶49.) Additional graduate education could substitute for professional experience, or significant experience in the field could substitute for formal education. (*Id.*) A person having this background would have understood how to design and build wireless communications systems for monitoring and controlling remote devices. (*Id.*)

E. Term to be Construed

Pursuant to 37 C.F.R. § 42.104(b)(3), Mueller proposes the following constructions.

1. "joint means"

This term is recited in claim 1 in means-plus-function form. Pursuant to 37

⁴ Mueller's proposed constructions (or lack thereof) for the purpose of this proceeding are not an admission that any claims are valid under 35 U.S.C. § 112. Mueller expressly reserves the right to raise, and does not waive, any argument in any litigation that claim terms in the '427 patent are indefinite or otherwise invalid.

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C.F.R. § 42.104(b)(3), Mueller proposes the following construction for this term in accordance with pre-AIA 35 U.S.C. § 112 ¶ 6 (now 35 U.S.C. § 112(f)):

Identified Function: for forming a joint. (Ex. 1001, Claim 1; Madisetti ¶61.)

Corresponding Structure: a water pipe union or a water pipe joint fabricated from typical metallic piping materials or polymeric materials. (Ex. 1001, 17:6-47, Figure 2; Madisetti ¶61.)

2. “display means”

This term is recited in claims 1 and 2 in means-plus-function form. Pursuant to 37 C.F.R. § 42.104(b)(3), Mueller proposes the following construction for this term in accordance with pre-AIA 35 U.S.C. § 112 ¶ 6 (now 35 U.S.C. § 112(f)):

Identified Function: “for visually displaying one or more water parameters.” (Ex. 1001, Claim 1; Madisetti ¶62.)

Corresponding Structure: a display that utilizes one or more illuminating technologies, such as LCD, LED, gas plasma, fluorescence, incandescent, halogen, halide, or other lighting technologies, and has a visual display that can be either an analog, character or digital display, or a combination thereof. (Ex. 1001, 18:14-60, Figures 2-3; Madisetti ¶62.)

3. “wired or wireless [electrical] communication means”

This term is recited in claims 1, 5, 8, and 14 in means-plus-function form. Pursuant to 37 C.F.R. § 42.104(b)(3), Mueller proposes the following construction

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for this term in accordance with pre-AIA 35 U.S.C. § 112 ¶ 6 (now 35 U.S.C. § 112(f)):

Identified Function: for communicating water parameter data. (Ex. 1001, Claim 1; Madisetti ¶63.)

Corresponding Structure: a transceiver or other software and hardware for using radio-frequency, Bluetooth, ZigBee, WiFi, optical or other wireless technology, IP or DHCP protocols, or wire data transfer. (Ex. 1001, 6:34-43, 35:50-36:13, Figures 1 and 3; Madisetti ¶63.)

VII. THE CHALLENGED CLAIMS ARE UNPATENTABLE OVER THE PRIOR ART.

A. Overview of the Prior Art

4. *Williamson* –Water Meter With Housing, Joints, Display, Microprocessor, Power Source, Flow Sensor, and Wireless Communication Means

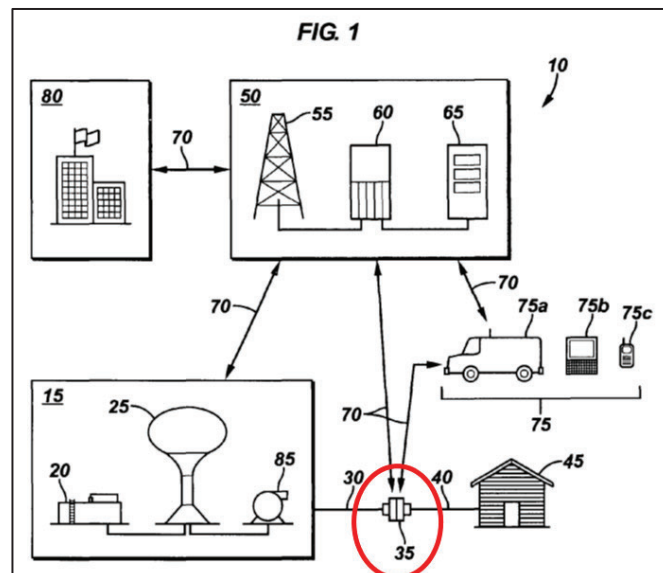
Williamson generally relates to a “system and method for remotely monitoring and controlling a water meter.” (Ex. 1004, Title.) *Williamson* discloses that conventional utility meters “are typically capable of transmitting data only relatively infrequently due to power constraints,” have a limited transmission distance, and “do not allow for rapid and tailored response to emergency situations that may require an immediate shut-off of a utility to a selected customer or group of customers. (*Id.*, 1:18-27.) *Williamson* teaches that “there is a need for a water meter and system that

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provides real-time access to usage data, two-way communication over a significant distance, and remote calibration and control functions.” (*Id.*, 1:38-41.)

To address this need, *Williamson* discloses the use of “a self-powered water meter operable to monitor the client water usage, wherein the meter is communicatively coupled to the wireless network and operable to provide two-way communication with the network operations center, and wherein the meter is operable to transmit data concerning the client water usage to the network operations center.” (*Id.*, 1:64-2:3.) With reference to Figure 1, *Williamson* discloses, a “wireless water meter 35” that regulates the flow of water to clients 45, such as “households or businesses within a service area,” from utility line 30. (*Id.*, 2:50-63.)

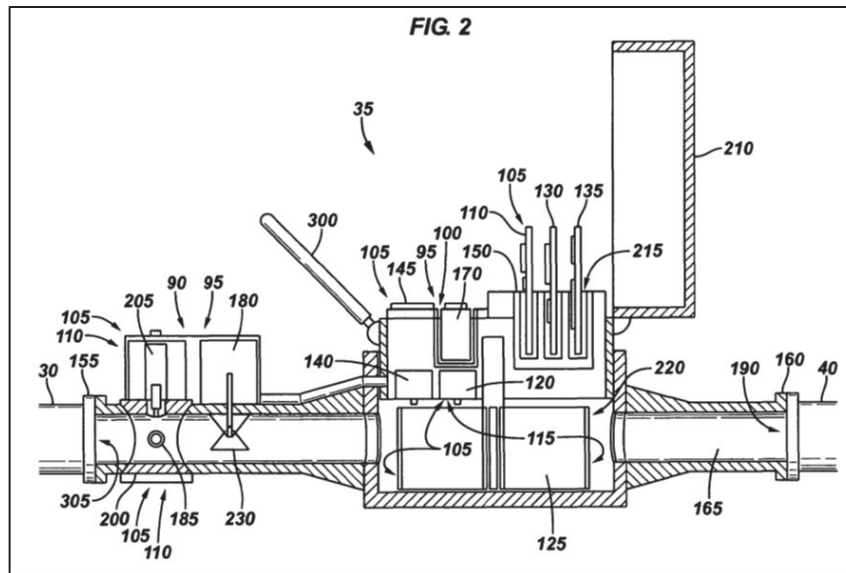
***Williamson*, Figure 1**



Williamson discloses, with reference to Figure 2, that the “[w]ireless water

meter 35 includes utility line connection 155 and client line connection 160 to provide connections with utility line 30 and client line 40, respectively.” (*Id.*, 3:61-64.) *Williamson* teaches that the wireless water meter 35 “may include display 145, such as an LCD readout for example, to display information and water usage data,” and a “sealing lid 210 (shown in an open position in FIG. 2) to provide a sealed compartment for the electronic components of meter 35.” The wireless water meter 35 of *Williamson* also “includes charging system 90, power system 95, battery system 100, calibration system 105, meter shut-off system 110, flow measurement system 115, wireless communications module 130, and electronic systems module 150, among other components.” (*Id.*, 4:18-24.) (Madisetti ¶¶64-66.)

***Williamson*, Figure 2**



Williamson was not disclosed to, cited by, or considered by the Examiner

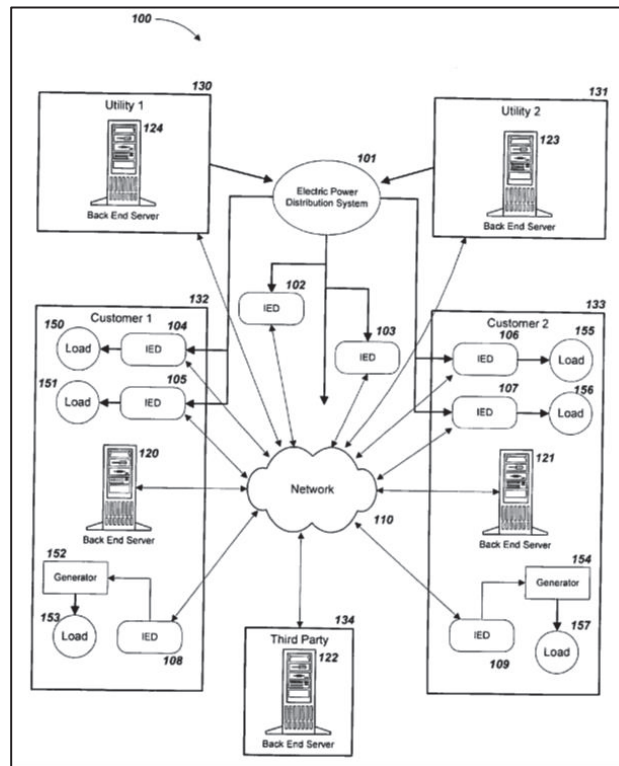
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during prosecution of the '427 patent.

5. *Ransom* – Using Technology to Securely Provide Utility Data in a Confidential Format

As discussed above, the disclosure in the '427 patent specification relating to data security was directly copied from *Ransom*. *Ransom* relates to a “power management architecture” that includes “intelligent electronic devices (‘IED’s’)” to “manage the flow and consumption of power from the system.” (Ex. 1005, Abstract.) While the disclosed system relates primarily to an electrical power system, *Ransom* discloses that the IEDs may include water meters. *Id.* ¶[0090] (“IEDs include . . . remote terminal units (‘RTUs’) [and] RTUs that measure water data”); Madisetti ¶68. With reference to Figure 1, *Ransom* discloses that IEDs 102-109 “measure, monitor and control quality, distribution, and consumption of electric power from the system 101,” and are interconnected via a network 110 such as the Internet. (*Id.*, ¶[0050].)

***Ransom*, Figure 1**



Ransom discloses that “[m]ost channels between components in an [energy management] [s]ystem are insecure channels subject to security attacks including malicious acts such as forgery, denial of service, invasion of privacy and so forth” and that “[m]essages passed over insecure channels are subject to interception, tampering and fraud.” (*Id.*, ¶[0108].) *Ransom* teaches that as “systems expand and incorporate public networks, particularly the Internet, wireless networks and telephone systems, the need for secure transfer of data becomes crucial.” (*Id.*, ¶[0109].) Accordingly, *Ransom* discloses “various techniques, including encryption, authentication, integrity and non-repudiation that provide secure communications.”

(*Id.*, ¶[0116].)

Encryption, explains *Ransom*, “provides privacy by preventing anyone but the intended recipient(s) of a message from reading it.” (*Id.*) “Authentication ensures that a message comes from the person from whom it purports to have come from.” (*Id.*) “Integrity ensures that a message was not altered in transit.” (*Id.*) And “[n]on-repudiation prevents the sender from denying that they sent a message.” (*Id.*) The *Ransom* specification includes detailed teachings relating to these and other security mechanisms and systems that “provide robust security” to a network and to a device on a network. (*Id.*, ¶[0108].) (Madisetti ¶¶68-70.)

Ransom issued as U.S. Patent No. 7,188,033, which the Examiner identified as a cited reference during prosecution of the ’427 patent. (Ex. 1002, 463.) Neither *Ransom* nor its issued patent were discussed or applied to the claims, and the Examiner was clearly unaware that vast portions of *Ransom* had been copied and included in the application for the ’427 patent.

6. *Dawes* – Controlling Internet Protocol (IP) Devices Using a Conveniently Located Touchscreen

Dawes describes an “integrated security system” that enables users to “control home devices via a personal web portal, mobile phone, or other client device.” (Ex. 1006, Abstract.) With reference to Figure 1, reproduced below, *Dawes* teaches a system whereby “conventional home security sensors, cameras, touchscreen

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keypads, lighting controls, and/or Internet Protocol (IP) devices in the home (or business) become connected devices that are accessible anywhere in the world from a web browser, mobile phone or through *content-enabled touchscreens*.” (*Id.*, ¶[0045].)

Dawes, Fig. 1

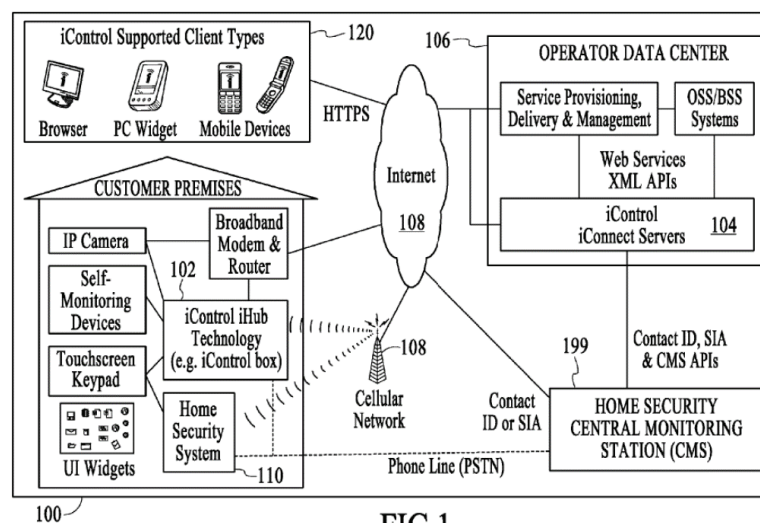


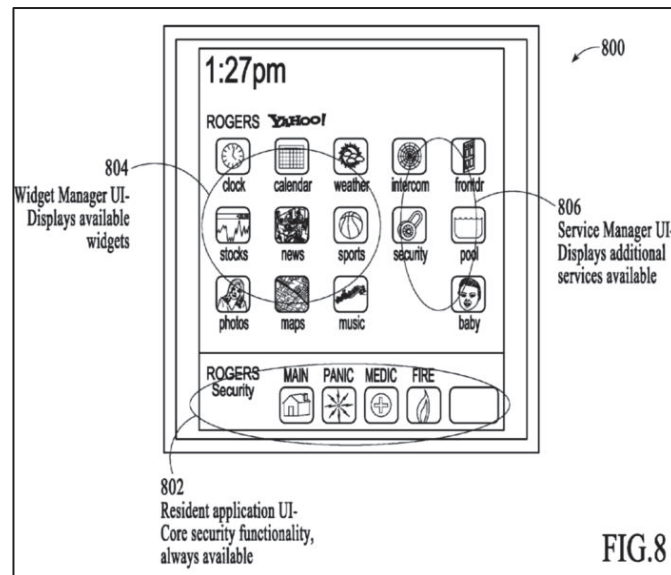
FIG.1

Dawes discloses that the touchscreen “operates wirelessly with a premise security system.” (Ex. 1006, ¶[0160].) *Dawes* teaches that the touchscreen “incorporates an RF transceiver component” that can communicate directly with the home sensors. (*Id.*) See also Figure 2 (showing a “PC Widget or Touchscreen Keypad” 208 as among the client devices 120 in wireless communication with the system via the internet and, e.g., a mobile portal). Figure 8 of *Dawes*, reproduced below, shows “an example screenshot 800 of a networked security touchscreen,” including a user interface 206 that has “icons by which a user selects or interacts

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with additional services or components (e.g., intercom control, security, cameras) coupled to the system in particular regions (e.g., front door, baby, etc.) available via the touchscreen.” (*Id.*, ¶[0148].) (Madisetti ¶¶72-73.)

Dawes, Figure 8



Dawes was never disclosed to, cited by, or considered by the Examiner during prosecution of the '427 patent.

B. Ground 1: *Williamson* and *Ransom* Render Obvious Claims 1, 2, 4-8, 13, 14, 16, and 18-20.

1. Rationale for Combining *Williamson* and *Ransom*

As discussed above, *Williamson* discloses a water meter that monitors client water usage, is communicatively coupled to a wireless network for providing two-way communication with a network operations center, and transmits data concerning the client water usage to the network operations center. (Ex. 1004, 1:65-2:3.) As also

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discussed above, *Ransom* discloses using a variety of security mechanisms to protect utility data for wireless transmission and access. (Ex. 1005.) It would have been obvious to one of ordinary skill in the art to protect the water use data transmitted wirelessly in the *Williamson* system using the security mechanisms taught by *Ransom*. (Madisetti ¶75.)

Both *Williamson* and *Ransom* relate to the remote monitoring of utility meters using communications over a wireless network. *E.g.*, Ex. 1004, 1:49-54; Ex. 1005, ¶[0024]); Madisetti ¶76. While *Williamson* relates primarily to “remotely monitoring and controlling a water meter,” (Ex. 1004, Title), the field of the *Williamson* invention is described more broadly as relating to “measuring meters,” and *Williamson* discloses that the invention “provides a number of advantages and benefits over conventional utility meters,” generally. (*Id.*, 1:12-14, 8:65-66; Madisetti ¶76.) Similarly, although *Ransom* relates primarily to an electrical power system, *Ransom* discloses that the “intelligent electronic devices (‘IED’s’)” within the system include water meters. (Ex. 1005, ¶[0090]; Madisetti ¶76.) Thus, a skilled artisan would have recognized that *Williamson* and *Ransom* are within the same general field and directed to similar problems. (Madisetti ¶76.)

A person of ordinary skill in the art would have been motivated to protect the water use data transmitted wirelessly in the *Williamson* system using the security mechanisms taught by *Ransom* in order to provide privacy, ensure authenticity, and

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prevent tampering. (Madisetti ¶77.) For example, *Ransom* teaches that security techniques like authentication and encryption are needed to “prevent[] fraudulent substitution of . . . devices or spoofing of . . . data generation in an attempt to defraud” and to “enable[] users of unsecured networks, such as the internet, to securely and privately exchange data.” (Ex. 1005, ¶[0054].) *Ransom* also discloses the vulnerabilities of insecure channels and teaches that as “systems expand and incorporate public networks, particularly the Internet, wireless networks and telephone systems, the need for secure transfer of data becomes crucial.” (*Id.*, ¶¶[0108]-[0109].) A person of ordinary skill in the art would have looked to *Ransom* and found solutions for “provid[ing] robust security” to a network and to a device on a network. (*Id.*, ¶[0108].) (Madisetti ¶77.)

A skilled artisan would have had a reasonable expectation of success by using the combination of *Williamson* and *Ransom*, and would have expected the system to yield predictable results. (Madisetti ¶78.) *Williamson* already discloses remotely monitoring a water meter and accessing water use data via a network operations center and mobile devices. (Ex. 1004, 3:21-33, Figure 1.) *Ransom* merely provides examples of security techniques that could be used to protect the water use data transmitted and accessed in the *Williamson* system. (Madisetti ¶78.)

The obviousness of protecting water use data in a system like *Williamson*’s using the security mechanisms taught by *Ransom* is confirmed by Klicpera’s

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copying of extensive detailed disclosure from *Ransom* for use in the '427 patent.

2. Claim 1

In this Petition, Mueller's application of the prior art to the Challenged Claims is based on the current language of the Challenged Claims in the '427 patent. On May 8, 2018, a Certificate of Correction issued with changes to claims 1 and 18-20. (Ex. 1002, 505-506.) On August 13, 2019, a Certificate of Correction issued with additional changes to claim 1. (*Id.*, 542-543.) Thus, Mueller applies the prior art to claim 1 using the language in the August 13, 2019, Certificate of Correction, to claims 18-20 using the language in the May 8, 2018, Certificate of Correction, and to the remaining Challenged Claims as they issued in the '427 patent.

As noted above, Rein Tech is seeking to substantively amend the Challenged Claims in the pending *ex parte* reexamination of the '427 patent (Ex. 1003, 135-138). Should a reexamination certificate issue with any amendments to the Challenged Claims, or should Rein Tech seek to make claim amendments in this proceeding, Mueller reserves the right to provide additional argument and evidence to address such amendments.⁵

⁵ For example, and without limitation, Mueller reserves the right to show that any proposed substitute claims in this proceeding constitute non-statutory subject matter under 35 U.S.C. § 101. *See Amazon.com, Inc. v. Uniloc Luxembourg S.A.*,

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a. A water parameter use and monitoring apparatus comprising:

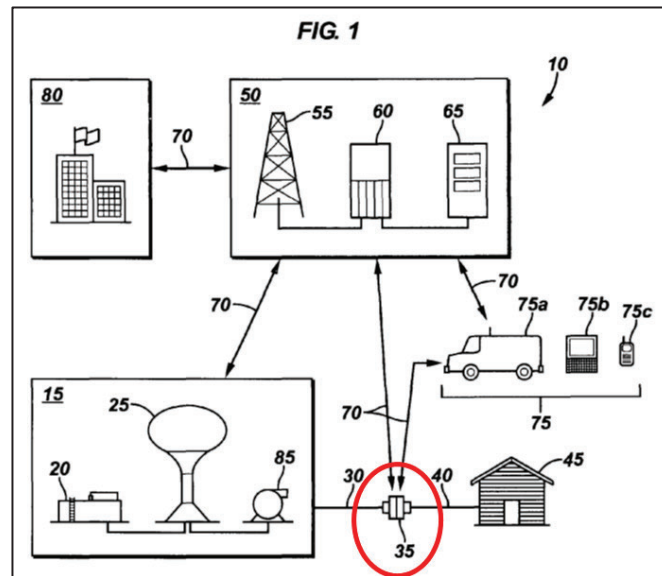
Williamson discloses this feature. (Madisetti ¶825.) *Williamson* discloses “[a] meter that monitors usage of a water distribution system by a client.” (Ex. 1004, Abstract.) *Williamson*’s teachings satisfy the “need for a water meter and system that provides real-time access to usage data, two-way communication over a significant distance, and remote calibration and control functions.” (*Id.*, 1:38-41.)

b. a base station designed to be connected to a cold or ambient main water supply for a residence or commercial building, said base station including a housing;

Williamson discloses this feature by teaching, with reference to Figure 1, that the “[s]ystem 10 includes a wireless water meter 35.” (Ex. 1004, 2:60.) *Williamson* discloses that the wireless water meter 35 “comprises a valve . . . or similar device to regulate water flow to client 45 from utility line 30.” (*Id.*, 2:61-63.) (Madisetti ¶¶83-85.)

IPR2017-00948, Paper No. 31 at 56-63 (PTAB Aug. 1, 2018) (concluding that substitute claims recite patent ineligible subject matter under § 101).

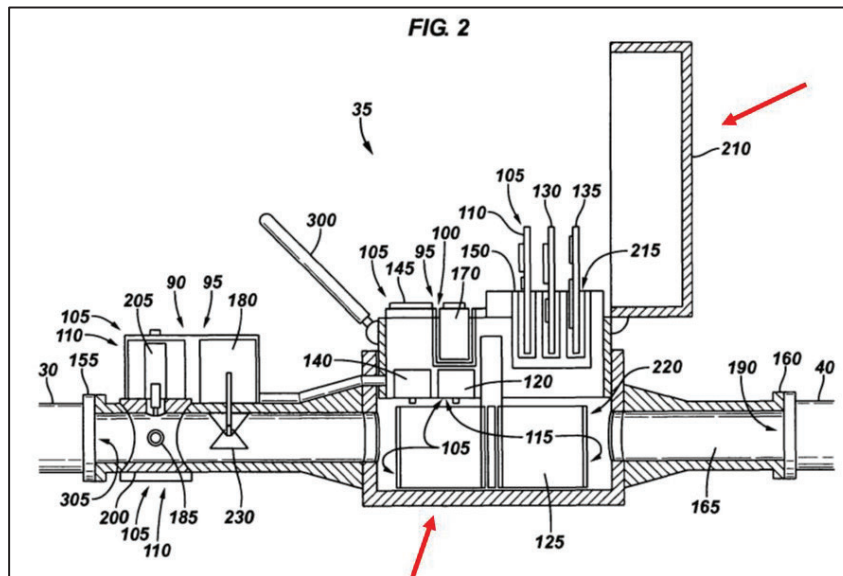
Williamson, Figure 1



Williamson teaches that the system includes “water utility grid 15 for the distribution of water to clients 45, e.g., households and businesses within a service area,” “via utility line 30 and client line 40.” (*Id.*, 2:51-59.) One of ordinary skill in the art would understand from this disclosure that wireless water meter of *Williamson* comprises a base station that is designed to be connected to a cold or ambient main water supply for a residence or commercial building. (Madisetti ¶84.)

With reference to Figure 2 below, *Williamson* teaches that the “[w]ireless water meter 35 may also include sealing lid 210 (shown in an open position in FIG. 2) to provide a sealed compartment for the electronic components of meter 35.” (*Id.*, 4:16-18.) A skilled artisan would understand from this disclosure that wireless water meter of *Williamson* includes a housing. (Madisetti ¶85.)

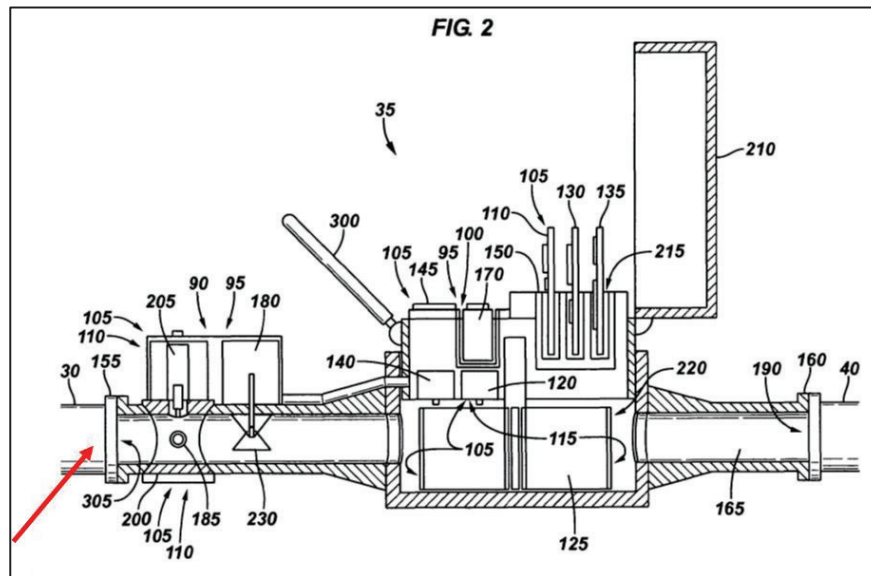
Williamson, Figure 2



- c. said base station having a plurality of joint means, said joint means having a first input for connecting to said cold or ambient main water supply;*

Williamson discloses this feature by teaching that the wireless water meter includes “utility line connection 155 and client line connection 160 to provide connections with utility line 30 and client line 40, respectively.” (Ex. 1004, 3:61-63; Madisetti ¶86.) *Williamson* discloses that the [w]ireless water meter 35 comprises entry port 305, client port 190, and interior channel 165 of a selected diameter to allow water flow between utility line 30 and client line 40 to client 45.” (*Id.*, 64-67.)

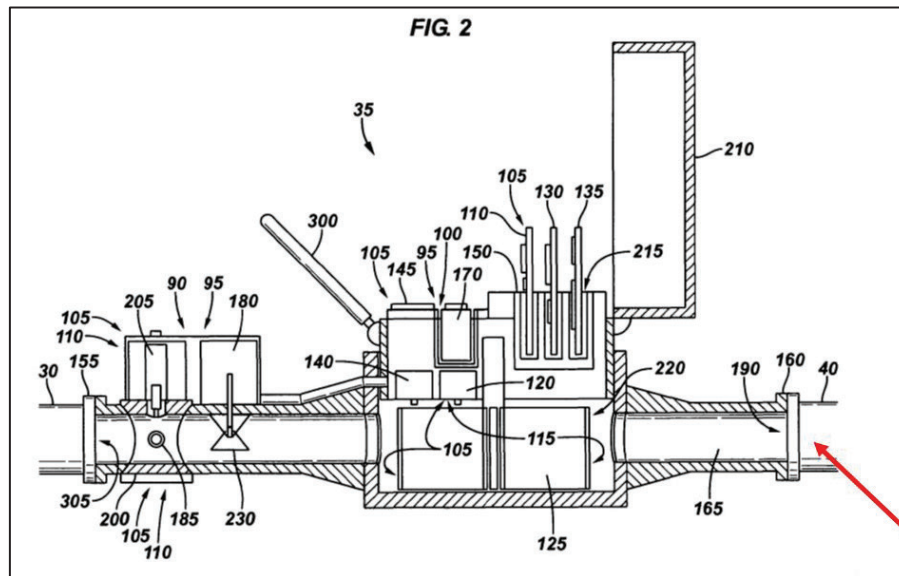
Williamson, Figure 2



- d. said plurality of joint means having a first output for connecting to the output of said cold or ambient main water supply;*

Williamson discloses this feature by teaching that the wireless water meter includes “utility line connection 155 and client line connection 160 to provide connections with utility line 30 and client line 40, respectively.” (Ex. 1004, 3:61-63; Madisetti ¶87.) *Williamson* discloses that the [w]ireless water meter 35 comprises entry port 305, client port 190, and interior channel 165 of a selected diameter to allow water flow between utility line 30 and client line 40 to client 45.” (*Id.*, 64-67.)

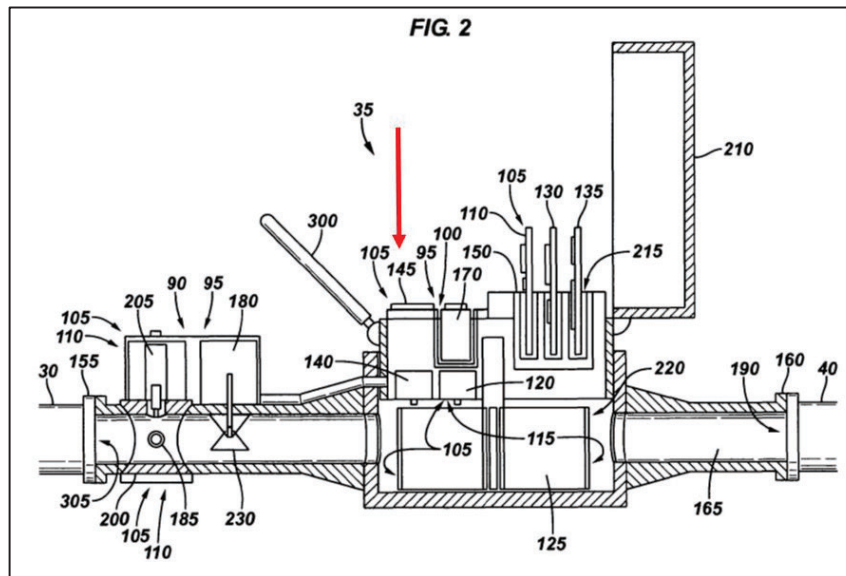
Williamson, Figure 2



e. said base station installed upstream of distribution lines inside said residence or commercial building;

Williamson discloses this feature by teaching that the wireless water meter 35 “comprises a valve . . . or similar device to regulate water flow to client 45 from utility line 30.” (Ex. 1004, 2:61-63; Madisetti ¶188.) *Williamson* teaches that the system includes “water utility grid 15 for the distribution of water to clients 45, e.g., households and businesses within a service area,” “via utility line 30 and client line 40.” (*Id.*, 2:51-59.) *Williamson* discloses that the [w]ireless water meter 35 comprises entry port 305, client port 190, and interior channel 165 of a selected diameter to allow water flow between utility line 30 and client line 40 to client 45.” (*Id.*, 64-67.)

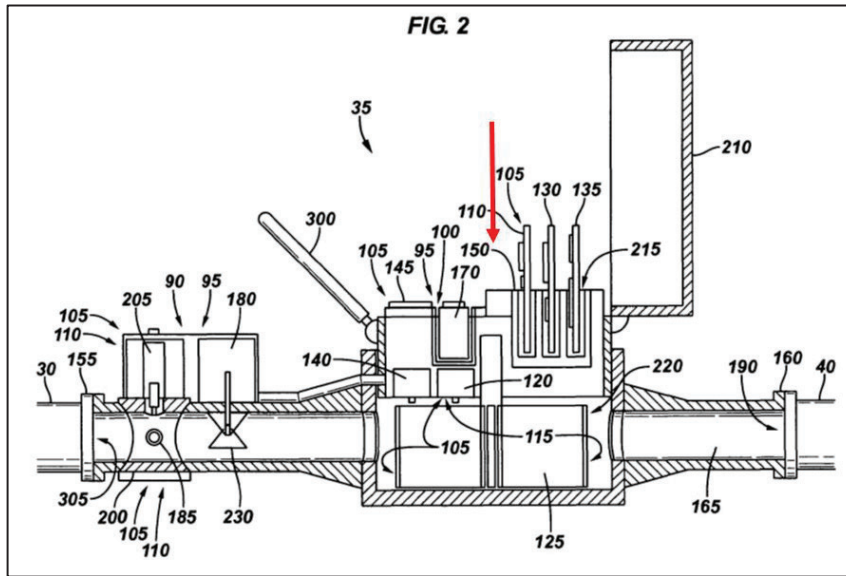
Williamson, Figure 2



g. electrical circuitry, including a microprocessor contained within said base station,

Williamson discloses this feature by teaching, with reference to Figure 2, that the wireless water meter 35 includes an “electronic systems module 150,” which “comprises a circuit board or similar electronic device comprising a microprocessor, memory and similar components.” (Ex. 1004, 4:18-24, 5:61-63; Madisetti ¶90.)

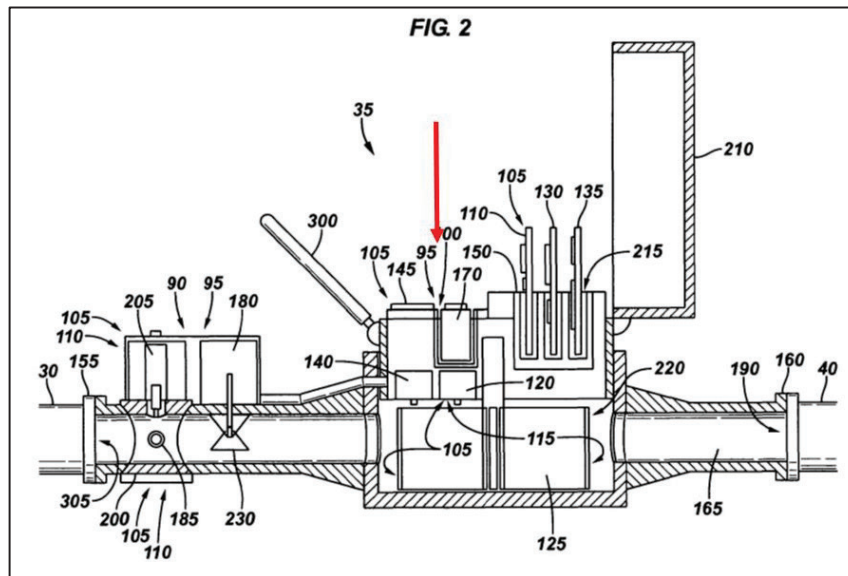
Williamson, Figure 2



h. said base station having a power source;

Williamson discloses this feature by teaching, with reference to Figure 2, that the wireless water meter 35 includes an “power system 95,” which “provides sufficient power to wireless water meter 35 to permit substantially real-time access to wireless water meter 35 over wireless network 70 and permit wireless water meter 35 to perform actions such as transmitting data and self-calibrating as needed and on a fairly regular basis.” (Ex. 1004, 4:18-30; Madisetti ¶91.) *Williamson* discloses that, “[a]s shown in the embodiment in FIG. 2, power system 95 may include battery system 100 and charging system 90 to provide a substantially self-powered meter 35.” (*Id.*, 4:30-32.) *See also id.*, 4:36-5:3 (describing details of battery system and charging system).

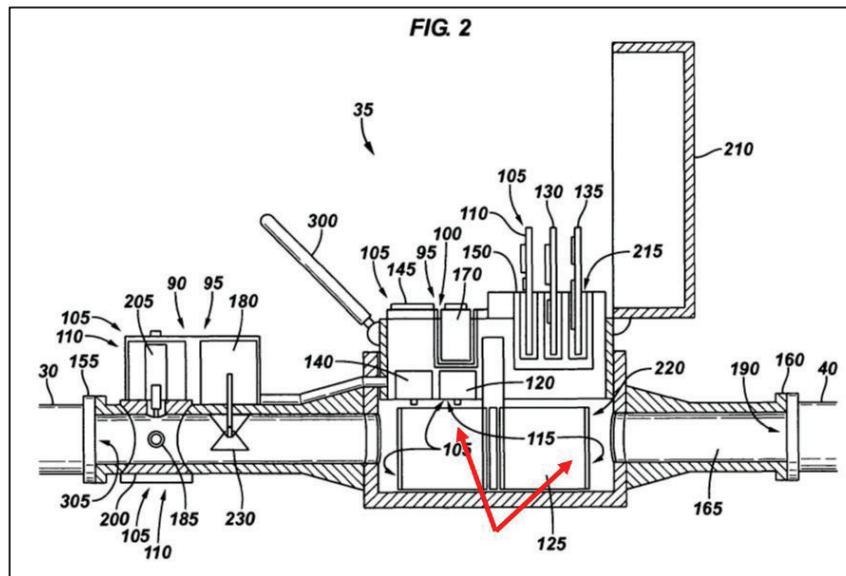
Williamson, Figure 2



- i. *one or more flow sensors in close proximity to said cold or ambient main water supply, said one or more flow sensors in electrical communication with said electrical circuitry; and*

Williamson discloses this feature by teaching, with reference to Figure 2, that the wireless water meter includes a “flow measurement system 115,” which “measures water flow volume through wireless water meter 35 to allow for a determination of the water usage by client 45.” (Ex. 1004, 4:18-22, 5:4-6; Madisetti ¶¶92-93.)

Williamson, Figure 2



Williamson discloses that “[f]low measurement system 115 may include any mechanical device, electronic device, or combination thereof, suitable for measuring water flow volume,” such as an “optic sensor 120 and paddle wheel 125,” “proximity sensors or Hall effect sensors, for example.” (*Id.*, 5:7-18.) *Williamson* teaches that “[f]low measurement system 115 may then transmit the flow volume measurement data to electronic systems module 150,” and that the “flow volume measurement data may also be displayed via display 145.” (*Id.*, 5:18-21.)

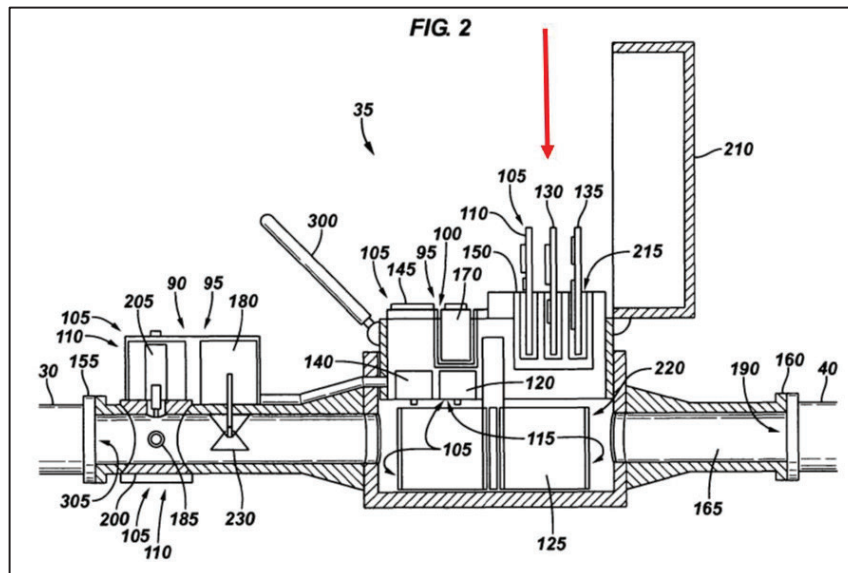
j. one or more wired or wireless communication means in communication with said electrical circuitry,

Williamson discloses this feature by teaching, with reference to Figure 2, that the wireless water meter includes a “wireless communications module 130,” which “may be communicatively coupled to wireless water meter 35 via an expansion card

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slot 215.” (Ex. 1004, 4:18-23, 5:37-40; Madisetti ¶¶94-95.) *Williamson* teaches that “[p]rimary wireless communications module 130 may comprise any module operable to support two-way communication over a wireless network,” such as “a plug-in radio communications card to support cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz or proprietary radio network protocols, among other wireless protocols.” (*Id.*, 5:40-46.)

Williamson, Figure 2



Williamson also discloses that the wireless water meter is “operable to monitor the client water usage, wherein the meter is communicatively coupled to the wireless network and operable to provide two-way communication with the network operations center, and wherein the meter is operable to transmit data concerning the client water usage to the network operations center.” (*Id.*, 1:64-2:3.)

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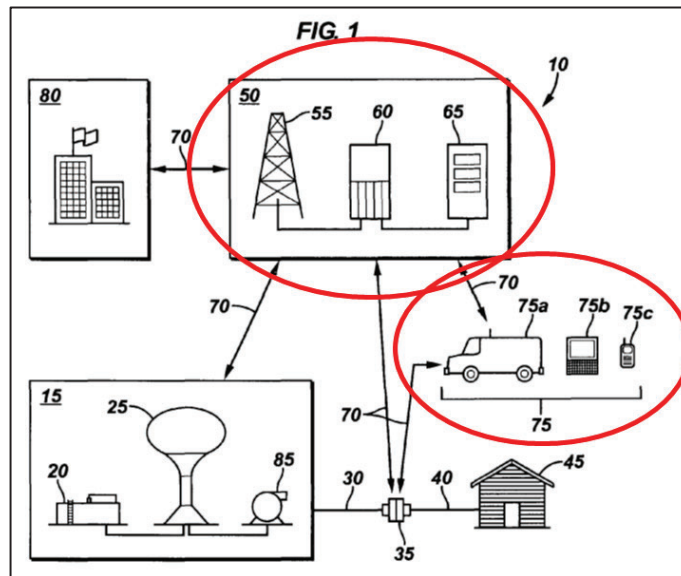
- k. said one or more wired or wireless communication means having the capability of communicating water parameter data and utilizing technology to securely communicate water parameter data in a confidential format to one or more remote monitoring apparatuses.*

Williamson and *Ransom* render this feature obvious. (Madisetti ¶¶96-99.)

Williamson discloses wirelessly communicating water parameter data to one or more remote monitoring apparatuses. For example, *Williamson* discloses that the wireless water meter 35 “may send and receive data via wireless network 70.” (Ex. 1004, 2:66-67.) *Williamson* teaches that “[w]ireless network 70 may be any public, private or proprietary network, for instance,” such as “cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz, proprietary radio network protocols, or any other type of wireless communications protocol.” (*Id.*, 3:1-5.)

Williamson further teaches, with reference to Figure 1, that “[n]etwork operations center 50 may receive data from wireless water meter 35 concerning the water usage of client 45,” and that the system 10 “may include one or more mobile field technicians 75 to facilitate data collection and transmission throughout the service area associated with system 10.” (*Id.*, 3:21-27.) *Williamson* explains that the mobile field technicians 75 “may include transmitter/receivers 75a, portable computers 75b, and cell phones or personal digital assistants (PDA) 75c, for example, to communicate with wireless water meter 35 and wireless network 70.” (*Id.*, 3:29-33.)

Williamson, Figure 1



Ransom discloses the use of technology to securely communicate utility data in a confidential format to one or more remote monitoring apparatuses. For example, *Ransom* discloses “various techniques, including encryption, authentication, integrity and non-repudiation that provide secure communications.” (Ex. 1005, ¶[0116].) *Ransom* teaches that “[e]ncryption provides privacy by preventing anyone but the intended recipient(s) of a message from reading it,” “[a]uthentication ensures that a message comes from the person from whom it purports to have come from,” “[i]ntegrity ensures that a message was not altered in transit,” and “[n]on-repudiation prevents the sender from denying that they sent a message.” (*Id.*) *Ransom* also includes detailed teachings relating to these and other security mechanisms and systems that “provide robust security” to a network and to a device on a network.

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(*Id.*, ¶[0108].)

As explained above, a person of ordinary skill in the art would have been motivated to protect the water use data transmitted wirelessly in the *Williamson* system using the security mechanisms taught by *Ransom* in order to provide privacy, ensure authenticity, and prevent tampering. (Madisetti ¶99.) Thus, *Williamson* in view of *Ransom* renders this feature obvious. (*Id.*)

3. Claim 2

- a. *The water parameter use and monitoring apparatus of claim 1, wherein said one or more wireless and/or wired remote monitor apparatuses, said one or more wireless and/or wired remote monitor apparatuses having the capability to retrieve water use and/or water parameter data from said monitoring apparatus,***

Williamson discloses this feature by teaching that the wireless water meter “is operable to provide two-way communication over a wireless network to provide substantially real-time access to usage data, allow remote control and monitoring of the meter, and provide communications over a relatively large distance.” (Ex. 1004, 8:66-9:4; Madisetti ¶¶100-101.) *Williamson* also discloses that the “[n]etwork operations center 50 may receive data from wireless water meter 35 concerning the water usage of client 45.” (*Id.*, 3:21-22.) In addition, *Williamson* teaches that “network operations center 50 may read meter 35, e.g., retrieve data from display 145 or electronic system module 150,” and that information such as “starting meter

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reading, volume, temperature, pressure, total time and ending meter reading, is collected and processed by network operations center 50.” (*Id.*, 6: 6:36-48.)

Williamson further discloses that mobile field technicians 75 such as “transmitter/receivers 75a, portable computers 75b, and cell phones or personal digital assistants (PDA) 75c,” “communicate with wireless water meter 35 and wireless network 70.” (*Id.*, 3:29-33, Figure 1.)

b. said monitoring apparatus having programmed instructions to exhibit on one or more display means such water parameter use data.

Williamson discloses this feature by teaching that the wireless water meter 35 “may include display 145, such as an LCD readout for example, to display information and water usage data, for instance.” (*Id.*, 4:10-13; Madisetti ¶102.)

Williamson discloses that “[d]isplay 145 may be connected to electronic systems module 150 to provide both local and remote field meter readings and measurements to field technicians 75 or network operations center 50.” (*Id.*, 4:13-16.)

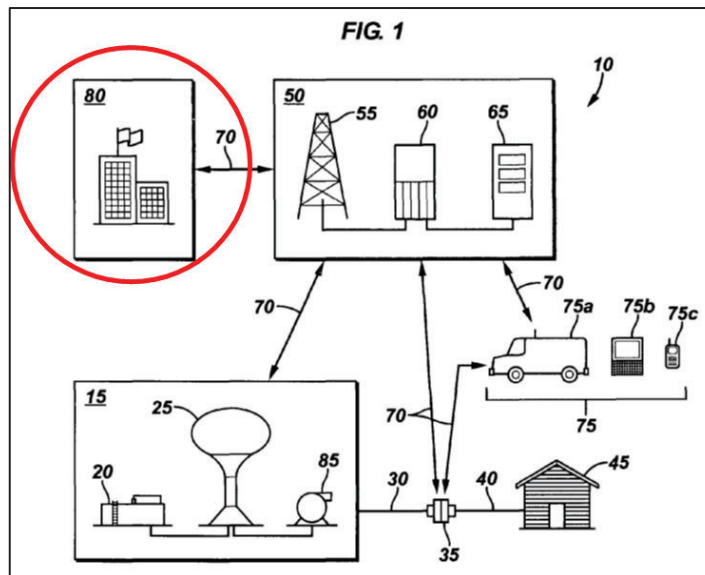
4. Claim 4

a. The water parameter use and monitoring apparatus of claim 2, further comprising a second remote designed for municipal or governmental use.

Williamson discloses this feature by teaching, with reference to Figure 1, that the system 10 “may include one or more emergency response centers 80,” which “may be any city, state or federal government agency responsible for responding to

emergencies and with authority to redirect or shut off utilities based on the circumstances, e.g., natural disasters or contamination, for example.” (Ex. 1004, 3:46-51; Madisetti ¶¶103-104.)

Williamson, Figure 1



Williamson discloses that “emergency response center 80 may include local fire departments, the Federal Emergency Management Agency (FEMA), the United States Department of Homeland Security (DHS), or similar entities,” and that “[n]etwork operations center 50 may communicate with emergency response center 80, via wireless network 70, for example, and manage the distribution of utilities throughout system 10 in accordance with instructions received from emergency response center 80.” (*Id.*, 3:51-59.)

5. Claim 5

a. The water parameter use and monitoring apparatus of

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claim 1, wherein said wireless or wired communication means utilizes encrypted format technology to securely provide water parameter information and/or data in a confidential format.

Williamson and *Ransom* render this feature obvious. (Madisetti ¶¶105-107.)

Williamson discloses that the wireless water meter 35 “may send and receive data via wireless network 70.” (Ex. 1004, 2:66-67.) *Williamson* teaches that “[w]ireless network 70 may be any public, private or proprietary network, for instance,” such as “cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz, proprietary radio network protocols, or any other type of wireless communications protocol.” (*Id.*, 3:1-5.)

Ransom discloses that “various techniques, including encryption, authentication, integrity and non-repudiation that provide secure communications.” (*Id.*, ¶[0116].) Encryption, explains *Ransom*, “provides privacy by preventing anyone but the intended recipient(s) of a message from reading it.” (*Id.*) *Ransom* also discloses details regarding particular encryption format technologies, such as public key encryption, RSA, Advanced Encryption Standard, DES, Triple DES, and XML encryption. *See* Ex. 1005, ¶¶[0116]-[0133], [0166].

As explained above, a person of ordinary skill in the art would have been motivated to protect the water use data transmitted wirelessly in the *Williamson* system using the security mechanisms taught by *Ransom* in order to provide privacy, ensure authenticity, and prevent tampering. (Madisetti ¶107.) Thus, *Williamson* in

view of *Ransom* renders this feature obvious. (*Id.*)

6. Claim 6

- a. The water parameter use and monitoring apparatus of claim 1, wherein said confidential format utilizes authentication technology to ensure that transferred, uploaded, or downloaded information and/or data is communicated to an intended device or person.*

Williamson and *Ransom* render this feature obvious. (Madisetti ¶¶108-110.)

Williamson discloses that the wireless water meter 35 “may send and receive data via wireless network 70.” (Ex. 1004, 2:66-67.) *Williamson* teaches that “[w]ireless network 70 may be any public, private or proprietary network, for instance,” such as “cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz, proprietary radio network protocols, or any other type of wireless communications protocol.” (*Id.*, 3:1-5.)

Ransom discloses that “various techniques, including encryption, authentication, integrity and non-repudiation that provide secure communications.” (*Id.*, ¶[0116].) *Ransom* teaches that “Authentication ensures that a message comes from the person from whom it purports to have come from.” (*Id.*) *Ransom* also discloses details regarding particular authentication technologies, such as digital signatures, one-way hash functions, Secure HTTP, Kerberos, and Media access Control Addresses. See Ex. 1005, ¶¶[0116]-[0133].

As explained above, a person of ordinary skill in the art would have been motivated to protect the water use data transmitted wirelessly in the *Williamson*

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system using the security mechanisms taught by *Ransom* in order to provide privacy, ensure authenticity, and prevent tampering. (Madisetti ¶110.) Thus, *Williamson* in view of *Ransom* renders this feature obvious. (*Id.*)

7. Claim 7

- a. The water parameter use and monitoring apparatus of claim 1, wherein said confidential format utilizes integrity technology to ensures that a message, information or data does not alter in any way during transit.*

Williamson and *Ransom* render this feature obvious. (Madisetti ¶¶111-113.) *Williamson* discloses that the wireless water meter 35 “may send and receive data via wireless network 70.” (Ex. 1004, 2:66-67.) *Williamson* teaches that “[w]ireless network 70 may be any public, private or proprietary network, for instance,” such as “cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz, proprietary radio network protocols, or any other type of wireless communications protocol.” (*Id.*, 3:1-5.)

Ransom discloses that “various techniques, including encryption, authentication, integrity and non-repudiation that provide secure communications.” (*Id.*, ¶[0116].) *Ransom* teaches that “[i]ntegrity ensures that a message was not altered in transit.” (*Id.*) *Ransom* also discloses details regarding particular integrity technologies, such as digital signatures, one-way hash functions, and Media Access Control Addresses. See Ex. 1005, ¶¶[0116]-[0133].

As explained above, a person of ordinary skill in the art would have been

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motivated to protect the water use data transmitted wirelessly in the *Williamson* system using the security mechanisms taught by *Ransom* in order to provide privacy, ensure authenticity, and prevent tampering. (Madiseti ¶113.) Thus, *Williamson* in view of *Ransom* renders this feature obvious. (*Id.*)

8. Claim 8

- a. The water parameter use and monitoring apparatus of claim 1, wherein said confidential format utilizes non-repudiation technology that prevents a sender from denying that a message, data or information was sent by said wireless or wired communication means.*

Williamson and *Ransom* render this feature obvious. (Madiseti ¶¶114-116.) *Williamson* discloses that the wireless water meter 35 “may send and receive data via wireless network 70.” (Ex. 1004, 2:66-67.) *Williamson* teaches that “[w]ireless network 70 may be any public, private or proprietary network, for instance,” such as “cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz, proprietary radio network protocols, or any other type of wireless communications protocol.” (*Id.*, 3:1-5.)

Ransom discloses that “various techniques, including encryption, authentication, integrity and non-repudiation that provide secure communications.” (*Id.*, ¶[0116].) *Ransom* teaches that “[n]on-repudiation prevents the sender from denying that they sent a message.” (*Id.*) *Ransom* also discloses details regarding particular non-repudiation technologies, such as digital signatures and security services including Kerberos, Microsoft Passport, and Liberty Alliance. *See* Ex. 1005,

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¶¶[0116]-[0119], [0134]-[0141], [0168].

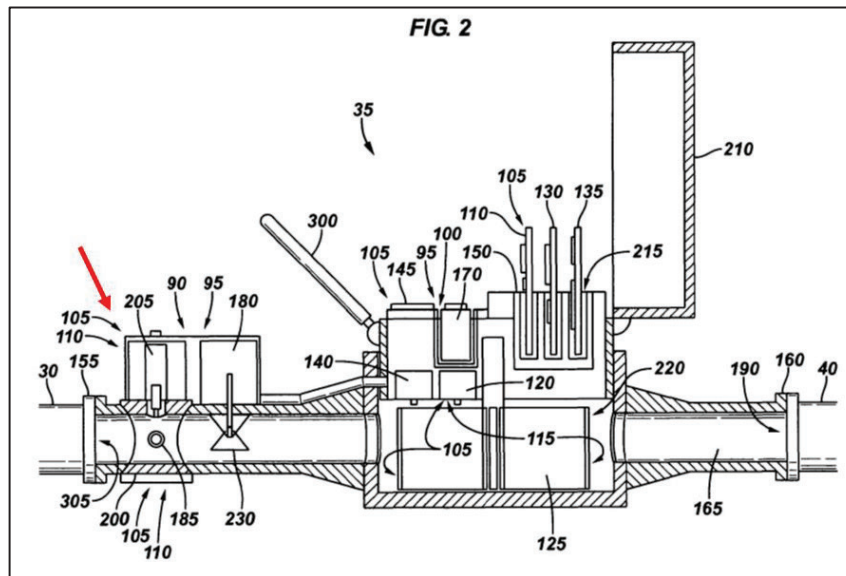
As explained above, a person of ordinary skill in the art would have been motivated to protect the water use data transmitted wirelessly in the *Williamson* system using the security mechanisms taught by *Ransom* in order to provide privacy, ensure authenticity, and prevent tampering. (Madisetti ¶116.) Thus, *Williamson* in view of *Ransom* renders this feature obvious. (*Id.*)

9. Claim 13

- a. The water parameter use and monitoring apparatus of claim 1, further comprising a water shut off mechanism, whereby said water shut off mechanism is controlled by programming instructions from said microprocessor for turning on and off said shut off means in response to local or remotely received instructions.*

Williamson discloses this feature by teaching, with reference to Figure 2, that the wireless water meter includes a “meter shut-off system 110,” which “allows wireless water meter 35 to shut-off water to client 45.” (Ex. 1004, 4:18-22, 5:22-23; Madisetti ¶¶117-118.) *Williamson* teaches that the [m]eter shut-off system 110 includes valve 200 that may be selectively opened and closed to permit or restrict water flow through wireless water meter 35” and that the “[v]alve 200 may be a low voltage ball valve or a low voltage solenoid valve, for example.” (*Id.*, 5:23-28.)

Williamson, Figure 2



Williamson discloses that the “[n]etwork operations center 50 may remotely operate wireless water meter 35 and meter shut-off system 110 via wireless network 70 to remotely shut-off water to client 45.” (*Id.*, 5:28-30.) See also *id.*, 2:63-65 (“Wireless water meter 35 is operable to determine the water usage of client 45 and control valve functions to shut water off or turn water on for client 45.”).

10. Claim 14

- a. *The water parameter use and monitoring apparatus of claims 1, wherein one of said one or more wired or wireless electrical communication means comprises an offsite central monitoring computer or cell, mobile or other telephone lines via satellite, microwave technology, the internet, cell tower, telephone lines, or any combinations thereof.*

Williamson discloses this feature by teaching that the system 10 “includes network operations center 50 to manage and monitor the distribution of water

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utilities in system 10.” (Ex. 1004, 3:6-8; Madisetti ¶119.) *Williamson* teaches that the “[n]etwork operations center 50 may be operated by a water utility company, for example,” and includes a wireless communications transmitter/receiver 55 to send and receive data over wireless network 70.” (*Id.*, 3:8-11.) *Williamson* also teaches that the network operations center 50 “includes one or more servers 60 to manage data transmission through system 10,” that the “transmitter/receiver 55 may receive radio frequency (RF) signals via wireless network 70 and convert these signals to Internet Protocol (IP) signals, or other suitable network protocol, for transmission to server 60, or other components of system 10,” and that the network operations center 50 “may also include database 65 to store data concerning client water usage and service area water usage, among other information.” (*Id.*, 3:11-20.)

11. Claim 16

- a. The water parameter use and monitoring apparatus of claim 1, wherein said wireless communication has a frequency in the range of 6 MHz to 250 GHz.*

Williamson discloses this feature by teaching that the “[w]ireless network 70 may be any public, private or proprietary network, for instance. Wireless network 70 may include, for example, cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz, proprietary radio network protocols, or any other type of wireless communications protocol.” (Ex. 1004, 3:2-5; Madisetti ¶120.) *See also id.*, 5:42-46 (“For example, primary wireless communications module 130 may include a plug-in radio

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communications card to support cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz or proprietary radio network protocols, among other wireless protocols.”).

12. Claim 18

As noted above, Mueller applies the prior art to claim 18 using the language in the May 8, 2018, Certificate of Correction. (Ex. 1002, 506.)

- a. The water parameter use and monitoring apparatus of claim 1, wherein said wireless communication means is in a radio frequency, Zigbee, or Bluetooth format.*

Williamson discloses this feature by teaching that the “[w]ireless network 70 may be any public, private or proprietary network, for instance. Wireless network 70 may include, for example, cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz, proprietary radio network protocols, or any other type of wireless communications protocol.” (Ex. 1004, 3:2-5; Madisetti ¶122.) *See also id.*, 5:42-46 (“For example, primary wireless communications module 130 may include a plug-in radio communications card to support cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz or proprietary radio network protocols, among other wireless protocols.”).

13. Claim 19

As noted above, Mueller applies the prior art to claim 19 using the language in the May 8, 2018, Certificate of Correction. (Ex. 1002, 506.)

- a. The water parameter use and monitoring apparatus of claim 1, wherein said wireless communication means is in a cellular technology format.*

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Williamson discloses this feature by teaching that the “[w]ireless network 70 may be any public, private or proprietary network, for instance. Wireless network 70 may include, for example, cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz, proprietary radio network protocols, or any other type of wireless communications protocol.” (Ex. 1004, 3:2-5; Madisetti ¶124.) *See also id.*, 5:42-46 (“For example, primary wireless communications module 130 may include a plug-in radio communications card to support cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz or proprietary radio network protocols, among other wireless protocols.”).

14. Claim 20

As noted above, Mueller applies the prior art to claim 20 using the language in the May 8, 2018, Certificate of Correction. (Ex. 1002, 506.)

a. *The water parameter use and monitoring apparatus of claim 1, wherein said wireless communication means is in a Wi-Fi format.*

Williamson discloses this feature by teaching that the “[w]ireless network 70 may be any public, private or proprietary network, for instance. Wireless network 70 may include, for example, cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz, proprietary radio network protocols, or any other type of wireless communications protocol.” (Ex. 1004, 3:2-5; Madisetti ¶126.) *See also id.*, 5:42-46 (“For example, primary wireless communications module 130 may include a plug-in radio communications card to support cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz or

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proprietary radio network protocols, among other wireless protocols.”).

C. Ground 2: *Williamson* and *Ransom* in View of *Dawes* Renders Obvious Claims 3 and 15.

1. Rationale for Combining *Dawes* with *Williamson* and *Ransom*

As discussed above, *Williamson* discloses a water meter that monitors client water usage, is communicatively coupled to a wireless network for providing two-way communication with a network operations center and mobile devices, and transmits data concerning the client water usage to the network operations center and to mobile devices. (Ex. 1004, 1:65-2:3, 3:27-33.) As also discussed above, *Dawes* teaches a system whereby “conventional home security sensors, cameras, touchscreen keypads, lighting controls, and/or Internet Protocol (IP) devices in the home (or business) become connected devices that are accessible anywhere in the world from a web browser, mobile phone or through content-enabled touchscreens.” (Ex. 1006, ¶[0045].) It would have been obvious to one of ordinary skill in the art to provide wireless communication between the water meter of *Williamson* and a conveniently located touchscreen using Internet Protocol as taught by *Dawes*. (Madisetti ¶127.)

Both *Williamson* and *Dawes* relate to remotely monitoring and controlling premises equipment. *E.g.*, Ex. 1004, 8:66-9:3 (“The wireless water meter of the present invention is operable to provide two-way communication over a wireless

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network to provide substantially real-time access to usage data [and] allow remote control and monitoring of the meter.”); Ex. 1006, Abstract (“The integrated security system delivers remote premise monitoring and control functionality to conventional monitored premise protection and complements existing premise protection equipment.”). A skilled artisan would have recognized that *Williamson* and *Dawes* are within the same general field and directed to similar problems. (Madisetti ¶128.)

A person of ordinary skill in the art would have been motivated to provide wireless communication between the water meter of *Williamson* the conveniently located touchscreen of *Dawes* over the Internet to give residents better access to information about their water usage and more convenient control over their water supply, particularly in cases of a suspected water leak. (Madisetti ¶129.) For example, *Dawes* discloses that “with the proliferation of the internet, ethernet and WiFi local area networks (LANs) and advanced wide area networks (WANs) that offer high bandwidth, low latency connections (broadband), as well as more advanced wireless WAN data networks (e.g. GPRS or CDMA 1xRTT) there increasingly exists the networking capability to extend these traditional security systems to offer enhanced functionality.” (Ex. 1005, ¶[0019].) *Dawes* also discloses that “the proliferation of broadband access has driven a corresponding increase in home and small business networking technologies and devices.” (*Id.*) As a result, teaches *Dawes*, “[i]t is desirable to extend traditional security systems to encompass

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enhanced functionality such as the ability to control and manage security systems from the world wide web, cellular telephones, or advanced function internet-based devices.” (*Id.*) *Dawes* accordingly describes a system whereby “conventional home security sensors, cameras, touchscreen keypads, lighting controls, and/or Internet Protocol (IP) devices in the home (or business) become connected devices that are accessible . . . through content-enabled touchscreens.” (*Id.*, ¶[0045].)

While this disclosure relates primarily to security systems, a skilled artisan would recognize that *Dawes’s* teachings as to the advantages of extending networking capability and enhancing functionality by controlling and managing systems from an on-premises touchscreen would be applicable to other premises equipment, such as water meters. (Madisetti ¶130.) Indeed, *Dawes* expressly discloses integrating “the functionality of the extant security system with other *non-security devices*” and providing “a keypad or touchscreen device [for] enabling users to monitor and control the extant security system *as well as other non-security devices*.” (Ex. 1005, ¶¶[0209], [0213].) *Williamson* discloses a need for “a water meter and system that provides real-time access to usage data.” (Ex. 1004, 1:38-39.) A person of ordinary skill in the art would have looked to *Dawes* and found a solution for making water meters and other devices at the home “accessible anywhere in the world from a web browser, mobile phone, or through content-enabled touchscreens.” (Ex. 1006, ¶[0045].) (Madisetti ¶130.)

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A skilled artisan would have had a reasonable expectation of success by using the combination of *Williamson* and *Dawes*, and would have expected the system to yield predictable results. (Madisetti ¶131.) *Williamson* already discloses remotely monitoring a water meter and accessing water use data via a network operations center and mobile devices. (Ex. 1004, 3:21-33, Figure 1.) *Dawes* merely provides additional examples of known communication protocols, networks and devices that could be used to increase the accessibility and control taught by *Dunstan*. (Madisetti ¶131.)

2. Claim 3

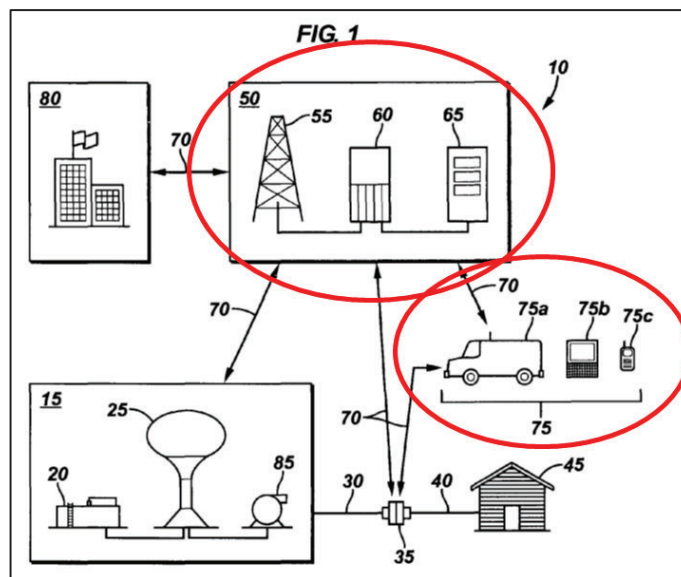
- a. ***The water parameter use and monitoring apparatus of claim 2, further comprising a first remote designed to be situated in a location within a residential or commercial building for convenient viewing or observation.***

Williamson and *Ransom* in view of *Dawes* renders this feature obvious. (Madisetti ¶¶132-136.) *Williamson* discloses wirelessly communicating water parameter data to one or more remote monitoring apparatuses. For example, *Williamson* discloses that the wireless water meter 35 “may send and receive data via wireless network 70.” (Ex. 1004, 2:66-67.) *Williamson* teaches that “[w]ireless network 70 may be any public, private or proprietary network, for instance,” such as “cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz, proprietary radio network protocols, or any other type of wireless communications protocol.” (*Id.*, 3:1-5.)

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Williamson further teaches, with reference to Figure 1, that “[n]etwork operations center 50 may receive data from wireless water meter 35 concerning the water usage of client 45,” and that the system 10 “may include one or more mobile field technicians 75 to facilitate data collection and transmission throughout the service area associated with system 10.” (*Id.*, 3:21-27.) *Williamson* explains that the mobile field technicians 75 “may include transmitter/receivers 75a, portable computers 75b, and cell phones or personal digital assistants (PDA) 75c, for example, to communicate with wireless water meter 35 and wireless network 70.” (*Id.*, 3:29-33.)

***Williamson*, Figure 1**



Dawes teaches a system whereby “conventional home security sensors, cameras, touchscreen keypads, lighting controls, and/or Internet Protocol (IP)

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devices in the home (or business) become connected devices that are accessible anywhere in the world from a web browser, mobile phone or through *content-enabled touchscreens*.” (Ex. 1006, ¶[0045].)

Dawes, Figure 1

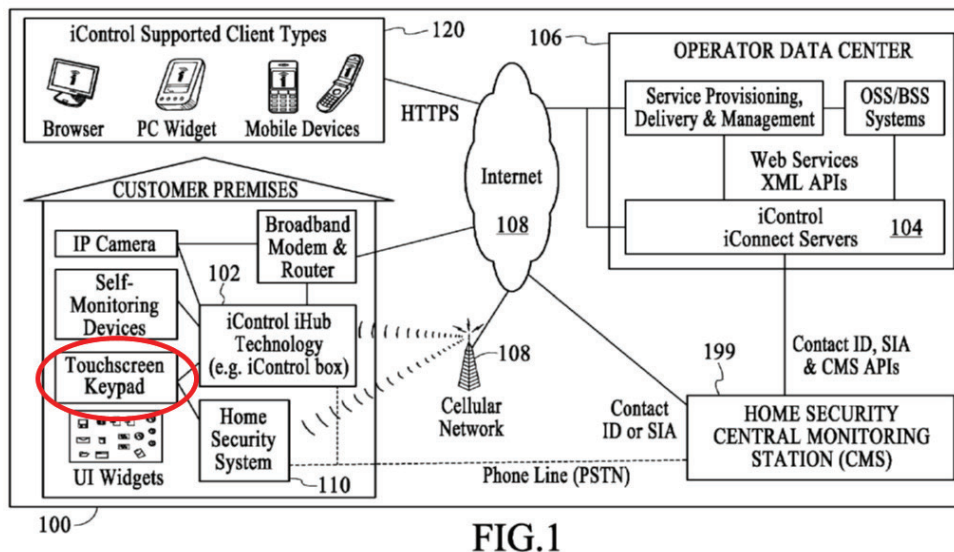


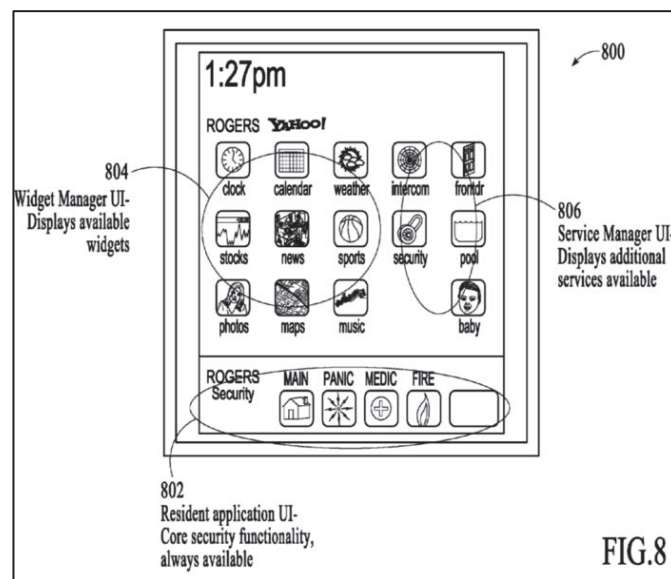
FIG.1

Dawes discloses that the touchscreen “operates wirelessly with a premise security system.” (Ex. 1006, ¶[0160].) *Dawes* teaches that the touchscreen “incorporates an RF transceiver component” that can communicate directly with the home sensors. (*Id.*) See also Figure 2 (showing a “PC Widget or Touchscreen Keypad” 208 as among the client devices 120 in wireless communication with the system via the internet and, e.g., a mobile portal). Figure 8 of *Dawes*, reproduced below, shows “an example screenshot 800 of a networked security touchscreen,” including a user interface 206 that has “icons by which a user selects or interacts with additional services or components (e.g., intercom control, security, cameras)

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coupled to the system in particular regions (e.g., front door, baby, etc.) available via the touchscreen.” (*Id.*, ¶[0148].)

Dawes, Figure 8



As explained above, a person of ordinary skill in the art would have been motivated to provide wireless communication between the water meter of *Williamson* the conveniently located touchscreen of *Dawes* over the Internet to give residents better access to information about their water usage and more convenient control over their water supply, particularly in cases of a suspected water leak. (Madisetti ¶136.)

3. Claim 15

- a. *The water parameter use and monitoring apparatus of claim 1, wherein said wireless communication is in a IP or DHCP protocol and wherein said IP or DHCP protocol and allows said apparatus to access and communicate over the Internet.*

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Williamson and *Ransom* in view of *Dawes* renders this feature obvious. (Madisetti ¶¶137-140.) *Williamson* discloses wirelessly communicating water parameter data to one or more remote monitoring apparatuses. For example, *Williamson* discloses that the wireless water meter 35 “may send and receive data via wireless network 70.” (Ex. 1004, 2:66-67.) *Williamson* teaches that “[w]ireless network 70 may be any public, private or proprietary network, for instance,” such as “cellular, Wi-Fi, Wi-Max, 400 MHz, 900 MHz, proprietary radio network protocols, or any other type of wireless communications protocol.” (*Id.*, 3:1-5.)

Williamson further teaches, with reference to Figure 1, that “[n]etwork operations center 50 may receive data from wireless water meter 35 concerning the water usage of client 45,” and that the system 10 “may include one or more mobile field technicians 75 to facilitate data collection and transmission throughout the service area associated with system 10.” (*Id.*, 3:21-27.) *Williamson* explains that the mobile field technicians 75 “may include transmitter/receivers 75a, portable computers 75b, and cell phones or personal digital assistants (PDA) 75c, for example, to communicate with wireless water meter 35 and wireless network 70.” (*Id.*, 3:29-33.)

Dawes teaches a system whereby “conventional home security sensors, cameras, touchscreen keypads, lighting controls, and/or Internet Protocol (IP) devices in the home (or business) become connected devices that are accessible

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anywhere in the world from a web browser, mobile phone or through content-enabled touchscreens.” (Ex. 1006, ¶[0045].) *Dawes* explains that “[i]t is desirable to extend traditional security systems to encompass enhanced functionality such as the ability to control and manage security systems from the world wide web, cellular telephones, or advanced function internet-based devices.” (*Id.*, ¶[0019].)

As explained above, a person of ordinary skill in the art would have been motivated to provide wireless communication between the water meter of *Williamson* and the devices of *Dawes* over the Internet to give residents better access to information about their water usage and more convenient control over their water supply, particularly in cases of a suspected water leak. (Madisetti ¶140.)

D. No Secondary Considerations Exist

“[S]econdary considerations of nonobviousness . . . cannot overcome a strong prima facie case of obviousness.” *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010). Where, as here, the claimed invention represents no more than “the predictable use of prior art elements according to their established functions,” secondary considerations are inadequate to establish non-obviousness as a matter of law. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). As explained in Grounds 1 and 2 above, the prior art renders obvious the challenged claims of the ’427 patent. No secondary indicia of non-obviousness having a nexus to the putative “invention” of the ’427 patent exist that are contrary to that conclusion. Mueller

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reserves its right to respond to any assertion of secondary indicia of non-obviousness advanced by Rein Tech.

VIII. CONCLUSION

For the foregoing reasons, Mueller requests that *inter partes* review of the '427 patent be instituted.

This 29th day of October, 2019.

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

I hereby certify that the foregoing Petition for *Inter Partes* Review complies with the type-volume limitation of 37 C.F.R. § 42.24(a)(1)(i) because it contains 11,026 words, excluding the parts of the Petition exempted by 37 C.F.R. § 42.24(a)(1).

I further certify that the foregoing Petition complies with the general format requirements of 37 C.F.R. § 42.6(a) and has been prepared using Microsoft Word 2016 in 14-point Times New Roman proportional font.

Dated: October 29, 2019

/Coby S. Nixon/
Coby S. Nixon
Registration No. 56,424
Attorney for Mueller Systems, LLC

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.105, the undersigned certifies that the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 8,347,427 and supporting materials were served on this day by Priority Mail Express (i) at the correspondence address of record for the subject patent and (ii) at the additional addresses below known to the Petitioner as likely to effect service:

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